



Serial ATA Supplemental Design Guide

Supplement ID	002
Applicable Spec.	1.0 Gold

Submission info

Name	Company	Date
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Description of design guidance

Although the defined OOB signaling scheme for Serial ATA has seen extensive review and validation work, first generation Serial ATA devices have a potential vulnerability with respect to OOB. If there is an incompatibility in the interpretation or implementation amongst devices, the interface could be hung with no way of recovering.

In order to help mitigate risk and to improve testability of initial designs, implementations should include a last-resort bailout mode in the Phy initialization scheme in order to facilitate establishing communications even if the OOB implementations suffer an incompatibility.

Supplemental Information

After some timeout resulting from failure to negotiate OOB (about ½ second is recommended), the bailout mode should be entered. In the bailout mode, the Phy should make additional attempts to establish communications and enter into the PhyReady state.

In bailout mode the OOB sequence continues to be retried according to the specification, but a sequence of 4096 SYNC primitives should be transmitted between OOB retry attempts. Once this mode is entered, the OOB state machine should also look for two-three consecutive SYNC primitives in the received data stream (in addition to the operations defined in the specification). If this event occurs after the bailout timer has expired, then from whatever state the OOB state machine is in, it should transition to a PhyReady state, and transmit SYNC primitives. After both sides of the cable have received two-three SYNC primitives, then both Phys are ready and normal SATA operation proceeds. CONT primitive processing should not be enabled during OOB bailout, but normal ALIGN insertion should be observed, resulting in 4096 SYNC primitives on the wire with an ALIGN primitive pair inserted every 256 SYNC primitives transmitted.

The bailout timer should be enabled only after some activity has been seen on the receive data lines. This prevents entering the bailout mode falsely for an unplugged cable, or a device on the other end of the cable that is not yet powered up.

Disposition log

10/18/2001	Submitted for review
10/23/2001	Clarified that SYNC stream adheres to normal ALIGN insertion rules and changed detection from two SYNCs to three SYNCs to be consistent with rest of OOB state machine.

Technical input submitted to the Serial ATA working group is subject to the terms of the Serial ATA participant's agreement (contributor's agreement).